Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An ink jet printhead comprising:

a plurality of nozzles, each nozzle having a nozzle aperture;

a bubble forming chamber corresponding to each of the nozzles respectively;

an ejectable liquid inlet for establishing fluid communication between the nozzle aperture and an ejectable liquid supply, the ejectable liquid inlet and the nozzle aperture being aligned such that they have a common central axis;

a heater element disposed in each of the bubble forming chambers respectively, the heater element having two bubble nucleation regions suspended within the bubble forming chamber in a plane parallel to and less than 5 microns from that of the nozzle aperture such that in use, a layer of an ejectable liquid is between the plane of the two bubble nucleation regions and that of the nozzle aperture, the two bubble nucleation regions also being laterally offset from the central axis, the lateral offset of one of the bubble nucleation regions being equal and opposite to the lateral offset of the other bubble nucleation region; such that,

heating the heater element to a temperature above the boiling point of the bubble forming liquid forms a gas bubble that causes the ejection of a drop of the ejectable liquid through the nozzle aperture corresponding to that heater element; wherein,

the bubble nucleation regions are spaced from each other such that bubbles nucleated at each will grow until they unite to form the gas bubble that causes the ejection of a drop of ejectable liquid, wherein

each heater element is configured such that an actuation energy of less than 500 nanojoules (nJ) is required to be applied to that heater element to heat that heater element sufficiently to form a said bubble in the bubble forming liquid thereby to cause the ejection of a said drop.

2. – 3. (Cancelled)

4. (Original) The printhead of claim 1 wherein the heater element is formed predominantly from titanium nitride.

5. (Original) The printhead of claim 1 wherein the bubble forming liquid and the ejectable liquid are of a common body of liquid.

6. (Original) The printhead of claim 1 being configured to print on a page and to be a page-width printhead.

7. (Original) The printhead of claim 1 wherein each heater element is predominantly formed from titanium nitride.

8. (Cancelled)

9. (Previously Presented) The printhead of claim 1 configured to receive a supply of the ejectable liquid at an ambient temperature, wherein each heater element is configured such that the energy required to cause the ejection of said drop is less than the energy required to heat a volume of said ejectable liquid equal to the volume of the said drop, from a temperature equal to said ambient temperature to said boiling point.

10. (Original) The printhead of claim 1 comprising a substrate having a substrate surface, wherein the areal density of the nozzles relative to the substrate surface exceeds 10,000 nozzles per square cm of substrate surface.

11. (Previously Presented) The printhead of claim 1 wherein each heater element has two opposite sides and is configured such that said gas bubble formed by that heater element is formed at both of said sides of that heater element.

12. (Original) The printhead of claim 1 wherein the bubble which each element is configured to form is collapsible and has a point of collapse, and wherein each heater element is configured such that the point of collapse of a bubble formed thereby is spaced from that heater element.

13. (Original) The printhead of claim 1 comprising a structure that is formed by chemical vapor deposition (CVD), the nozzles being incorporated on the structure.

14. (Original) The printhead of claim 1 comprising a structure which is less than 10 microns thick, the nozzles being incorporated on the structure.

15. (Original) The printhead of claim 1 comprising a plurality of nozzle chambers each corresponding to a respective nozzle, and a plurality of said heater elements being disposed within each chamber, the heater elements within each chamber being formed on different respective layers to one another.

16. (Original) The printhead of claim 1 wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50.

17. (Original) The printhead of claim 1 wherein each heater element includes solid material and is configured for a mass of less than 10 nanograms of the solid material of that heater element to be heated to a temperature above said boiling point thereby to heat said part of the bubble forming liquid to a temperature above said boiling point to cause the ejection of a said drop.

18. (Previously Presented) The printhead of claim 1 wherein each heater element has a conformal protective coating on any parts exposed to the bubble forming liquid, the coating of each heater element having been applied substantially to all sides of the heater element simultaneously such that the coating is seamless.

19. (Currently Amended) A printer system which incorporates a printhead, the printhead comprising:

a plurality of nozzles, each nozzle having a nozzle aperture;

an ejectable liquid inlet for establishing fluid communication between the nozzle aperture and an ejectable liquid supply, the ejectable liquid inlet and the nozzle aperture being aligned such that they have a common central axis;

a bubble forming chamber corresponding to each of the nozzles respectively;

at least one heater element disposed in each of the bubble forming chambers respectively, the heater element having two bubble nucleation regions suspended within the bubble forming chamber in a plane parallel to and less than 5 microns from that of the nozzle aperture such that in use, a layer of an ejectable liquid is between the plane of the two

bubble nucleation regions and that of the nozzle aperture, the two bubble nucleation regions also being laterally offset from the central axis, the lateral offset of one of the bubble nucleation regions being equal and opposite to the lateral offset of the other bubble nucleation region; such that,

heating the heater element to a temperature above the boiling point of the bubble forming liquid forms a gas bubble that causes the ejection of a drop of the ejectable liquid through the nozzle aperture corresponding to that heater element; wherein,

the bubble nucleation regions are spaced from each other such that bubbles nucleated at each will grow until they unite to form the gas bubble that causes the ejection of a drop of ejectable liquid, wherein

each heater element is configured such that an actuation energy of less than 500 nanojoules (nJ) is required to be applied to that heater element to heat that heater element sufficiently to form a said bubble in the bubble forming liquid thereby to cause the ejection of a said drop.

20. – 21. (Cancelled)

22. (Original) The system of claim 19 wherein the heater element is formed predominantly from titanium nitride.

23. (Original) The system of claim 19 being configured to support the bubble forming liquid in thermal contact with each said heater element, and to support the ejectable liquid adjacent each nozzle.

24. (Original) The system of claim 19 wherein the bubble forming liquid and the ejectable liquid are of a common body of liquid.

25. (Original) The system of claim 19 being configured to print on a page and to be a page-width printhead.

26. (Original) The system of claim 19 wherein each heater element is predominantly formed from titanium nitride.

27. (Cancelled)

28. (Previously Presented) The system of claim 19, wherein the printhead is configured to receive a supply of the ejectable liquid at an ambient temperature, and wherein each heater element is configured such that the energy required to cause the ejection of said drop is less than the energy required to heat a volume of said ejectable liquid equal to the volume of the said drop, from a temperature equal to said ambient temperature to said boiling point.

29. (Original) The system of claim 19 comprising a substrate having a substrate surface, wherein the areal density of the nozzles relative to the substrate surface exceeds 10,000 nozzles per square cm of substrate surface.

30. (Previously Presented) The system of claim 19 wherein each heater element has two opposite sides and is configured such that said gas bubble formed by that heater element is formed at both of said sides of that heater element.

31. (Original) The system of claim 19 wherein the bubble which each element is configured to form is collapsible and has a point of collapse, and wherein each heater element is configured such that the point of collapse of a bubble formed thereby is spaced from that heater element.

32. (Original) The system of claim 19 comprising a structure that is formed by chemical vapor deposition (CVD), the nozzles being incorporated on the structure.

33. (Original) The system of claim 19 comprising a structure which is less than 10 microns thick, the nozzles being incorporated on the structure.

34. (Original) The system of claim 19 comprising a plurality of nozzle chambers each corresponding to a respective nozzle, and a plurality of said heater elements being disposed within each chamber, the heater elements within each chamber being formed on different respective layers to one another.

35. (Original) The system of claim 19 wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50.

36. (Original) The system of claim 19 wherein each heater element includes solid material and is configured for a mass of less than 10 nanograms of the solid material of that heater element to be heated to a temperature above said boiling point thereby to heat said part of the bubble forming liquid to a temperature above said boiling point to cause the ejection of a said drop.

37. (Previously Presented) The system of claim 19 wherein each heater element has a conformal protective coating on any parts exposed to the bubble forming liquid, the coating of each heater element having been applied substantially to all sides of the heater element simultaneously such that the coating is seamless.

38. (Currently Amended) A method of ejecting drops of an ejectable liquid from a plurality of nozzles, each nozzle having a nozzle aperture;

a bubble forming chamber corresponding to each of the nozzles respectively;

an ejectable liquid inlet for establishing fluid communication between the nozzle aperture and an ejectable liquid supply, the ejectable liquid inlet and the nozzle aperture being aligned such that they have a common central axis;

at least one heater element disposed in each of the bubble forming chambers respectively, the heater element having two bubble nucleation regions suspended within the bubble forming chamber in a plane parallel to and less than 5 microns from that of the nozzle aperture such that in use, a layer of the ejectable liquid is between the plane of the two bubble nucleation regions and that of the nozzle aperture, the two bubble nucleation regions also being laterally offset from the central axis, the lateral offset of one of the bubble nucleation regions being equal and opposite to the lateral offset of the other bubble nucleation region; the method comprising the steps of:

heating the heater element to a temperature above the boiling point of the bubble forming liquid to form a gas bubble that causes the ejection of a drop of the ejectable liquid from the nozzle; and

supplying the nozzle with a replacement volume of the ejectable liquid equivalent to the ejected drop; wherein,

the bubble nucleation regions are spaced from each other such that bubbles nucleated at each will grow until they unite to form the gas bubble that causes the ejection of a drop of ejectable liquid, wherein

said step of heating the at least one heater element is effected by applying an actuation energy of less than 500nJ to each such heater element.

39. – 40. (Cancelled)

41. (Original) The method of claim 38 wherein the heater element is formed predominantly from titanium nitride.

42. (Original) The method of claim 38 wherein the bubble forming liquid and the ejectable liquid are of a common body of liquid.

43. (Original) The method of claim 38 wherein the printhead is configured to print on a page and to be a page-width printhead.

44. (Cancelled)

45. (Original) The method of claim 38 wherein prior to the step of heating the at least one heater element, a supply of the ejectable liquid, at an ambient temperature, is fed to the printhead, wherein the step of heating is effected by applying heat energy to the at least one heater element, wherein said applied heat energy is less than the energy required to heat a volume of said ejectable liquid equal to the volume of said drop, from a temperature equal to said ambient temperature to said boiling point.

46. (Original) The method of claim 38 wherein the printhead includes a substrate on which said nozzles are disposed, the substrate having a substrate surface and the areal density of the nozzles relative to the substrate surface exceeding 10,000 nozzles per square cm of substrate surface.

47. (Original) The method of claim 38 wherein the at least one heater element has two opposing sides and the bubble is generated at both of said sides of each heated heater element

48. (Original) The method of claim 38 wherein the generated bubble is collapsible and has a point of collapse, and is generated such that the point of collapse is spaced from the at least one heater element.

49. (Original) The method of claim 38 wherein the printhead has a structure that is less than 10 microns thick and which incorporates said nozzles thereon.

50. (Original) The method of claim 38 wherein the nozzles of the printhead are formed by chemical vapor deposition (CVD).

51. (Original) The method of claim 38 wherein the printhead has a plurality of nozzle chambers each chamber corresponding to a respective nozzle and a plurality of said heater elements are formed in each of the chambers, such that the heater elements in each chamber are formed on different respective layers to one another.

52. (Original) The method of claim 38 wherein the heater elements are formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50.

53. (Original) The method of claim 38 wherein the heater elements include solid material and wherein the step of heating at least one heater element comprises heating a mass of less than 10 nanograms of the solid material of each such heater element to a temperature above said boiling point.

54. (Original) The method of claim 38 wherein a conformal protective coating is applied to substantially to all sides of each of the heater elements simultaneously, such that the coating is seamless.